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ABSTRACT

The purposes of this study were to describe and define nonschool education according to curricular elements, suggest relationships between school and museum curricular elements and perspectives, and construct a heuristic device for curriculum elements and perspectives that will guide further study. Using a curricular model from "A Study of Schooling" (Goodlad and Associates 1979), nine curriculum variables (goals and objectives, materials, content, learning activities, strategies, evaluation, grouping, time, and space), and two perspectives (formal and experiential) were considered. Ten metropolitan museums were analyzed for 160 hours. A total of 1,686 visitors were observed and 12 full-time professional curators were interviewed. Using an observation guide to determine the experiential perspective of museum visitors and an interview guide to determine the formal perspective of curators, data were analyzed and categorized. Findings show that (1) visitors who had casual or social goals read the same amount of text, engaged in the same number of activities, and experienced as many displays as did knowledge-seeking visitors, (2) displays that combined materials drew the most attention, especially if they included visual, auditory, and tactile materials, (3) watching other visitors operate a device was preferred over reading directions for its use, and (4) as many as half the displays were skipped entirely. Implications for curriculum planning in museums and a heuristic device for the study of curriculum are discussed. Definitions, study instruments, and references are also provided. (LH)

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CURRICULUM IN MUSEUMS

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A paper presented at the annual meeting of the American
Educational Research Association, Chicago, April 1985.

I. Introduction

The purpose of this paper is to present the complete findings of an investigation into the curriculum of museums. At the last annual meeting of this Association, the investigation was in progress, and preliminary findings were reported at that time. (Beer, 1984) Those findings will not be repeated here. The focus of this paper is on the configuration of the museum curriculum and on a heuristic device for describing and analyzing other curriculum configurations.

II. Statement of the Problem

There is a paucity of inquiry into the educative functions of non-school institutions. Cross (1981, p. 199) believed that the inquiry into "how learning actually takes place in everyday settings is a necessity...that should receive first priority." Cremin (1976) noted, however, that non-school education will not be a priority until there is a definition of education that is less restricted to academia. Such a definition would project education "beyond schools and colleges to the multiplicity of individuals and institutions that educate." (Cremin, 1976, p. 29) The new definition of education, a definition that includes school and non-school learning, requires that non-school environments be investigated as systematically as schools have been studied. These investigations need to:

1. Describe and define non-school education according to its unique elements.
2. Link non-school and school curriculum for a holistic understanding of the entire educational environment.
3. Develop a heuristic devices for describing and analyzing configurations of curriculum in educational environments.

III. Purposes of the Study

The three purposes of this study were to answer the three needs listed above for one non-school institution, the museum. Questions relating specifically to museums were developed for each of the three purposes:

Purpose #1. To describe and define non-school education according to its curricular elements.

What is the nature of the curriculum elements as planned by curators for museum exhibits?

What is the nature of visitors' interaction with these elements in museum exhibits?

What are the relationships among the elements of the non-school curriculum as it is practiced by and experienced in museums?

What agreements and discrepancies exist between the curriculum as planned by the museum curator and as experienced by the museum visitor?

Purpose #2. To suggest relationships between school and museum curricular elements and perspectives.

Which curricular elements are similar to school and museum learning environments?

What evidence is there that school and museum curricular approaches are characterized by different curricular elements?

Purpose #3. To construct a heuristic device for curricular elements and perspectives that will guide further study of educational environments.

What model for inquiry into other educational environments is suggested by the findings on the museum curriculum?

The three purposes could have been addressed by studying the myriad non-school institutions: "families, churches, synagogues, libraries, museums, summer camps, benevolent societies, agricultural fairs, settlement houses, factories, radio stations, and television networks." (Cremin, 1976, p. 29) However, for this study, museums were chosen because of their vigorous self-identification as educational institutions, and because of the need to understand their curricular processes in sufficient depth so that a valid descriptive framework could be developed.

Although the study could have described the entire range of educational offerings in museums, the focus was on the curriculum of the displays. Much of the recent literature on museum education has focused on school-museum links (Ahern, 1980; Danilov, 1976; Levinson, 1982; Ory, 1984; Rabinowitz, 1973; Silver, 1978) or on the fact that the "educational role has been formalized at many museums with the offering of courses, lectures, demonstrations, workshops, conferences and guided tours." (Danilov, 1976, p. 307). This study sought to contribute to the smaller body of literature which believes that "exhibiting per se is perhaps the most important educational activity of a museum." (Museums USA , 1975, p. 51)

Theoretical Framework

To describe the museum curriculum as an example of non-school curriculum, research was needed into the elements of non-school curriculum. Studies of non-school education had not yet provided a synthesis of non-school curricular elements; therefore, one approach was to use descriptive studies of school curriculum as springboards for the study of the non-school curriculum and for the development of a conceptual model of that curriculum.

Several conceptual models of the school curriculum have been developed. The models often agree on common elements that characterize curriculum, although the relative importance of the elements and the relationships among them differ in each design. (McNeil, 1985; Saylor & Alexander, 1966; Tanner & Tanner, 1980; Tyler, 1950) For this investigation, the curriculum model from A Study of Schooling (Goodlad & Associates, 1979) was chosen as a framework from which the curriculum of museum exhibits could be considered.

A Study of Schooling offered an appropriate conceptual base because both it and this study were concerned with description. Other curriculum models have focused on many of the same curriculum variables, but have been prescriptive in intent. These models assume certain school curriculum variables and stipulate the relationships that should exist among them. However, the variables of the non-school curriculum have not yet been delineated, and it would be premature to prescribe their interrelationships.

In its nascent stage, non-school curriculum inquiry needs descriptions of what is, not ungrounded prescriptions of what ought to be.

In order to begin this descriptive process for museums, this study focused on nine elements and two perspective that A Study of Schooling had used to characterize school curriculum:

Curriculum Elements

1. Goals and objectives, the intended learning outcomes;
2. Materials, the objects in the learning environment;
3. Content, the subject matter and processes of the materials;
4. Learning Activities, the experiences designed to facilitate learning
5. Strategies, the methods of instruction;
6. Evaluation, the methods for gathering data to assess learner progress;
7. Grouping, the formation of groups to promote learning;
8. Time, the scheduling and use of time in the learning environment; and
9. Space, the arrangement and use of the space of the learning environment.

Curriculum Perspectives

1. the formal perspective of curriculum planners;
2. the experiential perspective of the learner.

Three perspectives from A Study of Schooling's model were not used in this study. An ideal perspective has not been synthesized for museums; the absence of classroom-like "teaching" at museum displays makes the instructional and operational perspectives problematic. The model's Qualitative Factors were beyond the scope of this investigation.

Definitions of Terms Used in the Study

Museum : "An organized and permanent non-profit institution, essentially educational or aesthetic in purpose, with professional staff, which owns and utilizes tangible objects, cares for them, and exhibits them to the public on some regular schedule." (Museum accreditation , 1973, p. 1)

School : For the purposes of this study (which drew a distinction only between learning in school and learning outside school), a "school" is "an institution of higher or precollegiate education in which the learner is officially registered and the activity is an accepted part of the student's program of studies." (Keeton, 1982, p. 621-622) School education includes "classrooms, grades, credits,... systematic sequence of courses, lessons arranged to specific time offerings and examinations." (Miller, 1983, p. 4)

Non-school education : The term was used in this study to refer to learning that is "recreational, voluntary, experiential, and perceptual" and occurs outside of school. (Miller, 1983, p. 4) The term "informal education" was avoided because it has been used to connote the educative impact of schools' "hidden" curriculum.

Curriculum : Definitions of curriculum often specify that it is a plan for the learning that occurs in schools (Saylor & Alexander, 1966), although some definitions recognize that non-school educative environments also can have a curriculum. (Eisner, 1979; Macdonald, Wolfson, & Zaret, 1973) A Study of Schooling's definition includes the

phrase "in the school and classroom," but otherwise was appropriate for use in this study's definition of curriculum as the activities, processes, and organizational arrangements intended for or used by curators and experienced by visitors in museums exhibits for the purpose of fulfilling educational goals .

IV: Methodology

Theoretical Framework

The purposes of this study were to describe, define, and classify the curriculum of non-school education as it is practiced in museums. Naturalistic inquiry was selected as an appropriate method for this study for two reasons. First, previous studies have found the specific methods of naturalistic inquiry -- participant observation and interview -- to be useful for investigating the museum environment. (Ramsey, 1974; Robinson, 1931a&b; Shettel, 1976; Shettel, Butcher, Cotton, Northrup, & Slough, 1968; Wolf, Andis, Tisdal, & Tymitz, 1979; Wolf, Munley, & Tymitz, 1979) Second, the principles of naturalistic inquiry are concerned with describing and classifying data, which were the purposes of this study. (Patton, 1980)

These appropriate uses of naturalistic inquiry notwithstanding, the question remains whether or not its methods belong in a study which also used the model from A Study of Schooling. A principle of naturalistic inquiry is that no a priori assumptions are made concerning "important" or "trivial" characteristics of the setting.

However, the naturalistic inquirer needs some framework with which to make sense of the mass of data that typically results from this approach. "The researcher is making interpretations and must have some conceptual scheme to do this." (Bogdan & Biklen, 1982, p. 32)

Population and Sample

Ten museums in were selected for the study. (Appendix A) The museums were selected according to four criteria: (1) that they represented each of the major museum types -- art, history, and natural science; (2) that they had a maximum of four major galleries so that observations could be made at most or all of the exhibits within the allotted time; (3) that the museums were in a metropolitan area and close to major traffic access routes to insure that there would be visitors at the museums during observation periods; and (4) that the museums were open at least sixteen hours per week so that the data on each museum could be gathered according to the schedule for the study.

During 160 hours of observation, a total of 1,686 visitors were observed. Twelve full-time, professional curators were interviewed for two hours each. (Appendix A) The initial plan for the full study was to interview one curator at each museum; however, two curators asked that additional staff be present at the interview to contribute their particular fields of expertise to the responses.

Instrumentation

In order to document the nine variables as experienced by the sample populations, two instruments, an observation

guide and an interview guide, were developed and tested during a pilot study of nine museums. The observation guide (Appendix B) was used to determine the experiential perspective of the museum visitors. The guide was arranged in nine sections corresponding to the nine curriculum variables. The responses within each section were empirically grounded from visitors' responses during the pilot study. New responses which emerged during the full study were added to the instrument. There were spaces on the guide for the coded responses of twenty visitors.

The interview guide (Appendix C) was used to determine the formal perspective of the museum curators. The guide was arranged in ten sections corresponding to the nine curriculum variables plus a general questions on exhibit design. There were no pre-conceived responses; the results all were grounded empirically in pilot study and full study interviews with the curators.

Data Collection

Observation stations were selected which maximized the observer's view of the exhibit, yet minimized intrusion into the flow of visitor traffic. To prevent the observer from influencing visitor activity, the observation guide was completed in code so that visitors who did chance to see the instrument would not be tempted to alter their behavior after seeing the instrument. Confidentiality of visitor responses was insured by assigning a number to each visitor. Visitors were asked for their goals only, never for their names or other identifying information.

Interviews with curators were conducted after all observations had been made so that curators' comments would not predispose the observer to see only those visitor behaviors expected by the curator. Curators were informed of the purpose and nature of the study at the beginning of the interview; however, results of the observations were withheld from the curators until the end of the interview so that the curators' responses would not be influenced by the findings from their particular museum. The questions were asked exactly as they appeared on the observation guide, and verbatim comments were noted. Confidentiality was not requested by any of the curators; their contribution is acknowledged in Appendix A.

Data Analysis

In as much as the observation data were nominal in nature, frequency counts and percentages were the appropriate units of analysis. Cross-tabulations were completed for several pairs of elements to ascertain possible relationships or trends among the variables. The content of the interviews was analyzed in the following manner: data were categorized according to the curricular elements of A Study of Schooling's model and according to new categorizations and relationships where the model proved inappropriate. The categorizations of the interview data were reviewed and validated by an independent researcher.

V. Presentation and Discussion of Findings

The Nine Elements and Two Perspectives in Museum Curriculum

This section begins with the results of the interviews with the twelve curators. The curators' approaches to the overall curriculum and to each variable are discussed.

Each curator had a plan according to which the individual elements of the exhibit "curriculum" were conceptualized. There were two types of plans. The first, employed by two curators, emphasized the needs and characteristics of the visitors. Most of the curators, however, used the second plan, which focused on the exhibit materials and their effective presentation. Included in this plan were such considerations as: the exhibit strategies that had worked in the past coupled with new media techniques; the "fit" of new exhibit materials into the theme of the museum; the value of the exhibit materials; and the "best possible way to present [objects] aesthetically."

All of the curators had definite goals for their museums, although none had formulated behavioral objectives for their visitors to achieve. Three of the curators listed cognitive knowledge goals as their first priority. Two curators wanted their visitors to learn facts but also "gain a feeling" for the times in which historical subjects lived. Three curators did not specifically mention learning as a goal. They focused, instead, on awareness of beauty, appreciation for the scope and depth of the collection, and "enjoyment of the museum experience on an emotional level."

Other goals mentioned by curators for their displays included: encouraging respect and care for the environment, providing positive interactive experiences for families, and giving the visitors "a good time." The goals of the curators agreed with those expressed by their counterparts nationwide, except that the curators in this study did not list social change as a goal for their museum. (Borun, 1977; Museums USA, 1975)

As the interviews progressed, it became apparent that in the minds of the curators, content and materials could be separated only with difficulty. According to the curators, the two elements form the bases upon which exhibits are designed. This inseparability of content and materials confirms a similar observation by Alexander (1979); the inter-relationship of the two elements will be discussed in detail below. One curator did distinguish the two elements. Materials for her museum were chosen with an emphasis on objects that could be touched and manipulated. Content was selected according to the interests of the curators, not the public, an approach to content selection which is common among museum staff. (Linn, 1983).

The curators expected visitors to engage in a variety of activities. Six curators expected visitors to read the labels; however, none of the curators expected reading to be visitors' primary activity. The curators who had manipulables in their displays expected the visitors to operate the devices first, then read about them. Two of these curators emphasized the importance of playing with the

devices. Three curators thought that visitors' first priority should be to look around the museum, then select a few displays of interest and think about them. One curator stated that the only activity she expected of all visitors was that they would watch the audio-visual presentations. One curator expected most of her visitors to "wander aimlessly about, look into rooms, poke around, and leave."

Curators mentioned five strategies that they used in their exhibits to aid in achieving the museum's goals. The strategies included: introductions, attention-getters, audio presentations, audio-visual presentations, and manipulables. Art and history museum curators used the fewest strategies, preferring to let the materials "speak for themselves." Science museum curators used the most strategies, and emphasized a multi-sensory approach to displays design.

Half of the curators made no attempt to evaluate the displays or the knowledge gained by the visitors. One of these curators stated that she counted visitor attendance and sales receipts, but did not consider these as "evaluations" of her displays. Her comment is in agreement with Low (1942) and Weingartner (1984), both of whom asserted that counting the number of visitors says very little about the value of the museum experience. The other half of the curators relied on visitors' unsolicited oral or written evaluative comments. Two curators were planning to use exit interviews at some time in the future to poll visitors' evaluation of the museums. The reluctance

displayed by the curators toward assessment is consistent with Shettel's (1968) finding that curators had trouble evaluating displays because the personal nature of the museum experience precluded much agreement on what constituted a "good" exhibit.

None of the curators had any method of grouping those visitors who were not already part of tours or other formal programs offered by the museums. One curator commented on the difficulty in providing a meaningful group experience to visitors with diverse goals and backgrounds. He noted that even the groups that come to the museum together "often break up, and smaller groups or individuals see the exhibits that interest them."

Curators had a variety of expectations concerning the amount of time that visitors would spend in the museum. Curators estimated nine seconds, two estimated one-minute, and two estimated five minutes per display. One curator believed that displays would be seen for two or three minutes by an individual visitor, longer by a group.

The curators arranged the space of their museums according to several plans. One-way traffic patterns, mazes, and "doughnuts" (exhibit areas surrounding an atrium) were used by three curators to provide an environment that would not confuse the visitor with too many entrances and exits. Two science museum curators and one art museum curator varied the arrangement of the materials and the color schemes to "draw" visitors from one display to the next. One art museum curator and one science museum curator

intentionally planned large spaces between displays to allow each to speak for itself and to avoid a "crammed in" appearance. One curator mentioned that the space in his art museum was allotted according to the anticipated impact of a display; that is, displays were allotted space according to the amount of concentration required of the visitor to understand the display. The curators agreed that they planned their exhibit spaces according to the demands of the content and materials that would comprise the displays. The inter-relationships among space, content and materials will be discussed below.

The Visitors' Interaction with the Nine Elements

Seventy-five percent of the visitors stated that the goal for their museum visit was knowledge, either for themselves (53%), their child (20%), or their guest (2%). Fourteen percent of the visitors were on their way to another destination and had stopped in at the museum because they were in its neighborhood and had some extra time. Nine percent of the visitors were bored and saw the museum visit as "something to do," while the remaining two percent of the visitors sought relief from the weather (either heat or rain). None of the visitors expressed specific objectives that they wanted to achieve during the visit.

Visitors attended more frequently to those displays that contained combinations materials. For example, displays that contained only written or only manipulable materials were attended to by 32% and 37% of the visitors, respectively. Displays that combined materials attracted

half or more of the visitors in their areas. For example, 50% of the visitors who were in an exhibit area with displays that combined written and realia materials experienced those displays. Ninety-nine percent of the visitors in an area with a display that combined text and models with an audio presentation experienced the display.

Less than one-third (32%) of the visitors in areas that had displays with only written materials experienced those displays. This suggests that visitors are attracted to a specific content more by the materials chosen to represent that content than by the subject matter itself, as explained by the text.

Visitors engaged in seven learning activities during their museum visit: reading information, reading directions, operating manipulables, watching others operate manipulables, watching and listening to audio-visual presentations, listening to audio presentations, and touching displays. Visitors also engaged in various sequences of activities. For example, some visitors read the general information and then touched the display. Visitors at manipulables sometimes operated the devices and then read the directions, while others read the directions first. The difficulty with this discussion of activities and activity sequences is that it has little meaning without also including the materials that were available for the visitors to experience; therefore, further comment on the relationship between activities and materials will be postponed until later in this section.

"Teachers" were unavailable to add extra explanations and interpretations to the displays observed in this study. Therefore, visitors acted as teachers for each other by offering examples, personal anecdotes, and alternative explanations of the displays. Often these teachers would test their "learners'" understanding of the display with questioning strategies. Ninety-six percent of these "teachers" acted in that capacity only for the companions with whom they came to the museum; four percent directed part or all of their teaching efforts to strangers.

Sixty-four percent of the visitors' evaluative comments were positive, including such statements as: "This is nice," "That's pretty," "Very interesting," and "I like it." The positive comments tended to be vague, while the negative comments (26%) often were quite specific: "I can't read it," "The sound is so bad," and "It's hard for me to appreciate it -- this little commentary doesn't help." A common comment at displays with a manipulable device was "It doesn't work," although in each instance that this was said the display did work, but had not been given sufficient time to begin its operation. Ten percent of the evaluative comments could not be judged by the observer to be positive or negative. These comments included, "It's ethereal," "This is different," "Outrageous," and "That's weird."

Eighty-one percent of the visitors experienced the museum in a sequential group; that is, the visitors came with companions to the museum and interacted only with them at each display. Eighteen percent of the visitors came

alone to the museum and did not interact with others during the visit. One percent of the visitors interacted with other groups or individuals during their museum visit.

Time spent by visitors at each display was measured according to whether the visitor remained more or less than thirty seconds, or skipped the display altogether. Thirty-six percent of the displays were attended to for more than thirty seconds, 21% for less than thirty seconds. Although the observer did not make other measurements of time, there appeared to be a bi-modal distribution of times, rather than a range of times spent at displays; that is most visitors who stayed longer than thirty seconds at a display stayed for several minutes, while most visitors who stayed less than thirty seconds at a display stayed less than ten seconds. Forty-three percent of the displays were skipped entirely by the visitors, a finding close to that of Clowes & Wolff (1980), who observed that at least 45% of displays were skipped. Time spent by visitors at displays varied considerably according to the materials that composed the displays. This relationship will be examined below.

There was no clear pattern to the visitors' use of the exhibit space. The findings of this study did not support completely the results of previous investigations that indicated that visitors attend more often to displays that are to the right and near the entrance of the museum. (Burns, nd; Coleman 1939; Daifuku, 1960; Melton, 1933; Porter, 1938; Robinson, 1931a&b; Shettel, 1976) For example, in one museum, all displays were on the visitors'

left, yet this museum had the fewest displays skipped. At another museum, displays near the back of the museum were experienced by more visitors than were most of the displays near the entrance. Therefore, factors other than spatial arrangement alone must have influenced which displays were seen by visitors. The relationship between exhibit space and other elements, particularly materials and content, will be discussed later in this section.

Relationships Among the Curriculum Variables

The findings on the individual curriculum elements reported above begin the process of describing curriculum in museums; however, several of those elements need to be related to each other to give a more complete picture of the museum curriculum. Some of the variables that appeared to have relationships that could be of use to museum personnel will be examined. Not all of the possible combinations will be discussed. For example, since 99% of the visitors did not interact with other groups or individuals in the museums, any relationship between the other elements and grouping cannot be determined from this study.

Goals and Other Variables

Goals for the museum experience appeared to have a relationship with several other variables. The goals of curators and visitors varied with the general content of the museum. Art museum curators did not mention specifically that "learning" was a goal that they would have liked their visitors to achieve. These curators focused, instead, on awareness of beauty, appreciation for the scope and depth of

the collection, and "enjoyment of the museum experience on an emotional level." Curators at the history museums wanted their visitors to learn and understand, but also to "gain a feeling" for the times in which historical subjects lived. Science museum curators emphasized cognitive knowledge goals, but also wanted their visitors to respect and care for the environment, to appreciate the collections, and "to have a good time."

Visitors' goals varied with the general content of the museum. Over eighty percent of the visitors at history and natural science museums were there to fulfill a knowledge goal (either for themselves, their children, or their guests). Fifty-two percent of visitors at art museums were there for knowledge goals. Over three times as many visitors who were on their way to another destination stopped at art museums than stopped at either of the other two types of museums. This cannot be explained by geographical location alone -- two of the art museums were the least accessible of the ten sites.

A relationship between visitors' goals and the amount of time spent at displays was documented by Housen (1980) and also was found in this study. A greater proportion of visitors with knowledge goals stayed longer than thirty seconds at displays than did visitors with the other goals. However, although visitors with knowledge goals were most apt to stay longer than thirty seconds at displays, their rate of skipping displays (40%-43%) was comparable to the skip rate for visitors with the other goals.

It might be expected that visitors with knowledge goals would engage in more activities than would visitors with the other goals. This expectation is supported only for the visitors seeking knowledge for themselves. Visitors with this goal averaged 2.5 activities per display. However, visitors with the other two knowledge goals averaged 2.1 activities per display, an average equal to that of visitors who came to the museum out of boredom.

Visitors seeking knowledge for their child or guest acted as teachers much more frequently than did visitors with other goals. The low proportion (12%) of visitors with the goal of self-knowledge who acted as teachers may be because more visitors with this knowledge goal were alone. Visitors rarely (1%) mixed with or acted as teachers for groups or individuals who had not accompanied them to the museum.

General Content and Other Variables

A comparison of the general content of the museum with visitor groupings indicates little difference in groups among the three content areas. The percentages vary more between art museums and the other two types of museums; however, the salient finding is that, regardless of the content of the museum, visitors remained either alone or with the companions with whom they came to the museum. Visitors rarely interacted with other groups or individuals.

The general content of the museum and the time that visitors spent at displays showed the strongest relationship in the area of skipped displays. Twenty percent fewer

displays were skipped in art museums (23%) than were skipped in science museums (43%). The percentage of visitors who spent more or less than thirty seconds per display was similar, regardless of the content of the museum.

Materials and Other Variables

Different material types were related to different activities. At displays in which text was combined with other materials, visitors often engaged in another activity before reading the information or directions. The presence of manipulables reduced the possibility that text would be read first, if at all. Visitors at displays with manipulables more often learned to operate the devices by watching another visitor operate them than by reading the directions.

Although manipulables appeared to decrease the frequency with which accompanying text was read, they appeared to increase the frequency with which audio-visual presentations were experienced. In the displays that included audio-visuals with text but not with manipulables, watching and listening to the audio-visual presentation accounted for little of the activity. However, in audio-visual displays with text and manipulables, watching and listening to the audio-visual presentation increased.

The time spent by visitors varied with the type of materials used in the display, a relationship previously noted by Linn (1983). Despite the evidence presented above and elsewhere (Borun, 1977) for the popularity of manipulables, displays comprised only of such materials were

skipped almost as often (63%) as were displays comprised only of text (68%). None of the visitors at manipulable-only displays stayed longer than thirty seconds.

The finding that working and non-working manipulable displays with text were skipped with comparable frequency (42% and 45%) confirms the finding above that visitors often will operate manipulables without reading text materials, which included an "Out of Order" sign at each non-working display. However, visitors did not stay with non-working manipulable displays as long as they did with working ones.

Displays with an audio-visual component were analyzed according to whether or not visitors stayed for the time of the entire presentation. No audio-visual presentation was able to hold half of the visitors for the whole show, nor were the shorter presentations, except those of 3 minutes, more successful than were the longer ones. These findings agree with the recommendations of Clowes & Wolff (1980) and Neal (1976) that the optimal length of audio-visual presentations is less than three minutes.

Grouping and Time

A comparison of grouping patterns with time spent at displays indicates that slightly more than half (57%) of the visitors who came in a group stayed at displays longer than thirty seconds. Slightly less than half (47%) of the visitors who came alone stayed longer than thirty seconds. Mixed groups were omitted from this comparison because they accounted for only 1% of the grouping patterns.

Materials, Content, and Space

The topic of a display and the objects comprising that display often were difficult to analyze according to their separate relationships with the other elements. Curators considered both content and materials to be the foundations upon which displays were created. One curator explained: "We build exhibits either around objects, and then find the background to go with them, or around a theme, and then find the objects to go with it." Materials and content were chosen together by the curators according to two criteria: that they "fit" with the theme of the museum and the existing displays, and that they appeal to the public.

Two of the variables as experienced by the visitors also were difficult to separate according to content or materials. The strategy of visitor-as-teacher was used by fewer visitors (15%) in art museums than in the other two museums (20%-21%). Perhaps this was because the artistic materials needed less explanation, or because the content of the art museum traditionally has been oriented more to private than to shared interpretations by the visitors.

For most of the evaluative comments, it was unclear whether the visitors were judging the content or the materials of the displays. Comments such as "That's nice" or "This is interesting" apply to both variables. The exception occurred in the natural science museums, which had a higher proportion of negative comments (43%, as opposed to 15% for art museums and none for history museums).

Visitors' use of the exhibit space varied from museum to museum, and from display to display. Spatial arrangement alone produced no consistent pattern of visitor attendance at displays, so the variable must have been related to other elements in the display environment. Sometimes the criteria for use appeared to be related to materials; large displays, and those with manipulables or other movable parts, were experienced most frequently. Unusual or disturbing content, such as in the art museum display which depicted a bather becoming a cat, also attracted visitors. The problem with these attention-getting displays was that other displays in their exhibit space appeared to suffer from the association. Although the attention-getters were seen by large proportions of visitors, the displays that surrounded the attention-getters were seen by the smallest proportions of visitors.

Agreements and Discrepancies Between the Two Perspectives

The approaches of the curators and visitors to the museum curriculum were identical for two of the elements. Neither perspective placed much emphasis on evaluation of the displays or the knowledge gained from them. Half of the curators had no plans for evaluation; the other half relied on casual comments from the visitors. Eleven percent of the visitors made evaluative comments, most of which were vague concerning the specific attributes of the displays that were liked or disliked. The curators and visitors also did very little with grouping inside the museum. None of the

curators had methods for grouping visitors, and only 1% of the visitors interacted with groups or individuals with whom they had not come to the museum.

On the other elements, the perspectives of the curator and visitor diverged. Curators most often mentioned knowledge goals for their visitors to achieve. Half (53%) of the visitors had such a goal for themselves. However, one-quarter of the visitors used the museum as a detour from another destination, as a haven from the heat or rain, or as a place to go when there was nothing else to do. Three of the curators hoped that the museum would be a place for a social experience. Although 81% of the visitors came to the museum in a group, very few (1%) of the visitors interacted with other groups or individuals. If inter-group contact was what the curators meant by their goal of "social experience," that goal was not shared by the visitors.

Curators selected materials that they believed would convey a display's content in the most appropriate manner. Visitors did not respond equally to all materials. Text materials, in particular, needed to be combined with other materials to attract visitors. Attention-getters attracted visitors to themselves, but appeared to decrease the amount of attention that visitors paid to other displays in their areas. Only one of the material combinations was able to attract more than half of the visitors in its area.

Visitors engaged activities differently than the curators expected. Curators expected visitors to read some or all of the text on each label. Especially at displays

with manipulables, many visitors ignored the labels entirely. Visitors learned to operate manipulables by watching others use them, not by reading the curators' directions. Visitors often touched displays, even when that activity was discouraged by signs or guards.

The visitors' strategy of acting as teachers was not expected by the curators. No provision was made to orient prospective "teachers" (especially parents) to the displays or to give them extra information that they could impart to their "learners."

Except for the art museum curator who believed that visitors would spend nine seconds at each display, the curators over-estimated the time that visitors would spend in the museum. Curators expected visitors to spend several minutes at displays. The observations indicated, however, that thirty-six percent of the displays were seen for more than thirty seconds, 21% were seen for less than thirty seconds, and 43% were skipped entirely. Although the time that visitors spent in the entire museum was not recorded, the findings of other studies indicated that the curators in this study who estimated three or four hours for a museum visit were too optimistic. (Robinson, 1928; Schwartz, 1967)

Curators' attempts to control their visitors' use of the exhibit space met with varying success. Two museums clearly separated the entrance from the exit, which forced the flow of traffic in a clockwise direction. One of these museums had the lowest skip rate (8%) of the ten sites, the other had the second-highest skip rate (48%). The two

curators that purposefully planned their exhibits to give visitors plenty of space to see each display had skip rates of 30% and 48%. The museum in which some of the displays were inches apart obtained similar results: half of its displays were skipped.

Implications for Curriculum Planning in Museums

These findings have several implications for the curators' approach to the curriculum of their displays. First, curators who emphasize knowledge goals cannot discount the visitors who have casual or social goals. These visitors read the same amount of text, engage in the same number of activities, and experience as many displays as do visitors who are seeking knowledge. Nor can curators assume that the knowledge-oriented visitor is uninterested in being entertained. Displays need to allow visitors to learn and to play.

Second, the materials that comprise the display are a major factor in attracting and holding the visitor. Manipulables seem to be a catalyst in getting visitors to interact with displays, although manipulables alone will not hold visitors' attention for long. Text alone will not attract visitors, but the addition of any other type of material to the text will increase attendance at a display. Displays need to allow for more than one mode of experience, e.g., visual, tactile, auditory.

Third, the visitors' disregard of text materials indicates that some of the information contained in such materials might be presented more effectively in another

mode. For example, visitors often learn to operate manipulables by watching others use them, not by reading the directions. Visitors also will watch short video presentations. These two findings can be combined: directions for manipulables can be presented in a video in which the visitor watches an actor demonstrate the use of the devices.

Fourth, the crucial finding about time spent in museums is not that displays are seen briefly; it is that as many as half of the displays are skipped entirely. Although curators base their displays on content and materials, the interactions of these elements with each other and with the exhibit space need to be taken into account so that, for example, attention-getting displays will not distract visitors from noticing other displays in the exhibit area.

Comparisons of Museum and School Curricula

Museum curriculum as it was found in this study will be compared to school curriculum. The elements and perspectives from A Study of Schooling's curriculum model form the bases of the discussion, and usefulness of that model for the museum environment will be considered.

Curriculum Perspectives : A Study of Schooling's separation of perspectives was useful in this study. Although the curators and visitors agreed on some elements, such as evaluation and grouping, there were areas in which the museum curriculum was not experienced by the visitors as the curators had planned. For example, curators did not expect their museums to be diversions, yet one quarter of

the visitors used the museum as a side-trip or as an escape. Also, visitors did not attend to displays for the amount of time that curators believed they would.

The problem in comparing the plans of the curators and the experiences of the visitors is that the primary target of the curators' curriculum often is not the visitors. School curriculum usually is directed to students; however, museum curriculum often is planned to impress and attract other museum professionals, specialists in artistic, historic, or scientific fields, funding agencies, and private donors. (Chambers, 1984; Linn, 1983) As this study indicated, curators' first concern may be with the "fit" of new material into the museum, both spatially and thematically. The interests of visitors rarely are the criteria for the selection of content and materials. Curators' own interests may prevail, or displays may come pre-packaged from another museum. From the perspective of teachers, students are essential to the school curriculum. The same cannot be said of museum visitors from the curators' perspective on the museum curriculum.

The Nine Curriculum Elements in Museums and Schools

Visitors and curators had a variety of goals for the museum experience that involved outcomes other than knowledge gains. Visitors came to the museum to have a social experience with family or guests, to get out of the weather, or to have something to do. These usually are not the reasons that students cite for attending school. Curators wanted visitors to enjoy themselves and appreciate

the collections, two goals that probably are not shared by school teachers. Neither visitors nor curators had formulated specific objectives that they wanted to achieve in the museum.

Content in most schools is divided among the separate disciplines, with specific topics decided upon by textbook publishers and boards of education. Although museums are divided broadly by content -- art, history, science -- the division is flexible. Historical and artistic artifacts are found in science museums; scientific equipment may be found in history museums. The curators indicated that they selected content according to their own interests, a prerogative rarely available to teachers.

Objects are the salient materials in the museum. Visitors responded most often to those displays that included natural and man-made objects, least often to text materials. This is not to say that text was unimportant; displays that had only objects also were seen by few visitors. Displays that combined materials drew the most attention, especially if they included visual, auditory, and tactile materials. The opposite situation prevails in schools, which rely predominately on written materials.

Because of this reliance on text, reading and other visual activities comprise most of the learning experiences in schools. However, the data from this study indicated that visitors might read text, but only after they had engaged in other activities. Tactile activities -- touching, manipulating -- were common. Watching another

visitor operate a device was preferred over reading the directions for its use.

Teaching strategies, in A Study of Schooling's connotation as "methods of instruction," were difficult to apprehend in the museum, for four reasons. First, the explanation and interpretation of each display is not accomplished by direct instruction. Second, some of those strategies are indistinguishable from other curricular elements. For example, all of the strategies mentioned by the curators in this study were materials. Third, a major strategy in schools -- sequencing various materials, topics and activities in some logical order -- will not work in museums because visitors experience displays in a "random access" manner, even when a specific sequence has been indicated. (Nielson, 1946) Finally, a school's clientele, e.g., the students, cannot exchange roles with the teachers. However, the museums visitors did use teaching strategies with their peers.

None of the curators used formal testing devices to evaluate either the displays or the learning that those displays engendered. Few of the visitors made specific evaluative comments about the displays. This is in marked contrast to the plethora of assesment devices that are used in schools.

Curators made no plans to group visitors at displays. Visitors rarely interacted with other groups or individuals with whom they had not come to the museum. Museums do offer classes, lectures, workshops, and other group learning

experiences that have a counterpart in schools; however, museums do not consistently organize all of the visitors into groups, as schools do with students.

Time was found to be an important factor in the museum curriculum, particularly because two-thirds of the displays either were seen for less than thirty seconds or were not seen at all. If knowledge acquisition takes time, as school personnel assert, then the brevity of most museum visits is not conducive to learning. On the other hand, perhaps the information in museums is presented in a manner that requires less time for learning.

The spatial arrangement of schools often is related directly to the demands of the separate disciplines and the materials required for their study. Curators in museums also organized space according to content and materials, but the visitors' use of that space was difficult to attribute specifically to those two elements or to the physical arrangement alone.

The problem with the foregoing discussion of the individual elements is that it is a disjointed, and rather superficial, account of the complexity of curriculum in museums. The major findings from this study are concerned not with the separate curricular elements, but with their interactions and relationships. The major drawback in using A Study of Schooling's curriculum model to describe educational environments is that the model fails to depict inter-relationships among the curriculum variables .

Interactions among the variables have been documented for museums, but interactions also occur in schools. For example, there is a prominent relationship in the school curriculum between goals and objectives and the evaluation of students' achievement of them. A Study of Schooling could describe schools and other institutions of learning more fully if its model included relationships among the variables.

VI: A Heuristic Device for the Study of Curriculum

Educational environments need to be examined so that various approaches to curriculum can be compared for their effectiveness in promoting learning, not so that institutions themselves can be compared. A device is needed that will describe curriculum in terms of how, not where, it occurs. A focus on the configuration of the curriculum permits institutions to change and experiment with their curriculum. The present classification of education by institution only stereotypes those institutions as places where one type of learning predominates.

The device needs to depict the relative influence of the curriculum elements in various educational environments. In this way, elements that are effective in one environment might be transferred to another environment. An example of this transfer was suggested above for the two institutions in this study: the museum's effectiveness in using objects to present information may help schools make more use of objects within a discursive curriculum.

The device also needs to indicate if the elements primarily are under the control of the providers or the participants in the educational environment. This will help institutions determine which curricular elements they may or may not be able to alter. For example, museum visitors showed a distinct preference for materials that did not involve text. Curators may not be able to change the visitors' inclination to touch instead of read, but the finding indicates that curators' efforts might be directed toward improving the collection, rather than toward writing more labels to explain it.

This study indicated that elements from A Study of Schooling's curriculum model can be used, with modification, in a heuristic device for describing various types of curriculum. The elements in the device would be:

Goals : the general outcomes that the institution and its clientele wish to achieve.

Objectives : the specific learning outcomes expected by an institution, its clientele, or both.

Materials : the man-made and natural objects in the learning environment.

Content : the topic with which the materials are concerned.

Activities : the experiences that result in knowledge gain.

Presentation Strategies : the selection and arrangement of the other elements that results in knowledge gain.

Evaluation : the gathering of data to judge the effectiveness of the other elements to communicate information.

Grouping : the use of existing groups or the formation of new groups in the learning environment.

Time : the use of time, either scheduled or unscheduled, in the learning environment.

Space : the arrangement and use of the environment of the institution.

Consequences : the effects of the learning experiences on the institution, its clientele, or both.

These elements modify A Study of Schooling model in two areas. First, goals and objectives have been separated in recognition of this study's finding that both are not required for an institution to be characterized as an educator. Second, the element "consequences" has been added. Although A Study of Schooling's model accounts for the antecedents of learning (e.g., goals and objectives), the conditions during learning (e.g., activities, grouping), and the outcomes of learning (e.g., evaluation), it says nothing about the consequences of those outcomes. Institutions that are very much alike in the other elements may be more or less effective as educators, depending on the ramifications of the outcomes. For example, the characteristics of the curricula provided by the military and by schools are quite similar. However, the military is noted for its educational success, while schools often are not. The difference is due more to the consequences of the learning outcomes than to major variations in the elements. If a student in school does not learn, the immediate effect on both the student and the school is not as severe as the consequences of an untrained military force.

These eleven elements can be positioned on a curriculum configuration model (Figure 1) to describe a particular curriculum in terms of: (1) the relationships among the elements; (2) the relative influence of those elements; and (3) whether the elements are under the control of the institution or its clientele. The model has one axis for the institution-clientele continuum, and one for the influence continuum. Relationships are indicated by placing the terms in proximity to each other. The curriculum elements are listed at the side, to be inserted into the model in an arrangement that describes a particular curriculum configuration.

Figure 2 shows the curriculum configuration that resulted from the data in this study. The disposition of the elements is as follows:

Materials and content are close together at the top center of the model. They were the elements with the most influence on the museum curriculum. They are close together because their separate influences often could not be determined. The two elements are between provider and participant because they were important both to curators and to visitors. Space has been located with materials and content to indicate that its influences sometimes were inseparable from the other elements.

The relationship between activities and strategies was not as inseparable. Visitors rarely responded to some of the curators' strategies, such as introductions with text; curators' did not anticipate some of the visitors' activities, such as watching other visitors operate manipulables. Activities and strategies often were influenced by the available materials and content, so the former have been placed under the latter on the model.

Visitors were in control of the time in the museum; the curators consistently over-estimated the amount of time that visitors would spend at displays. Therefore, the

Goals
Objectives
Materials
Content
Activities
Presentation
Strategies
Evaluation
Grouping
Time
Space
Consequences

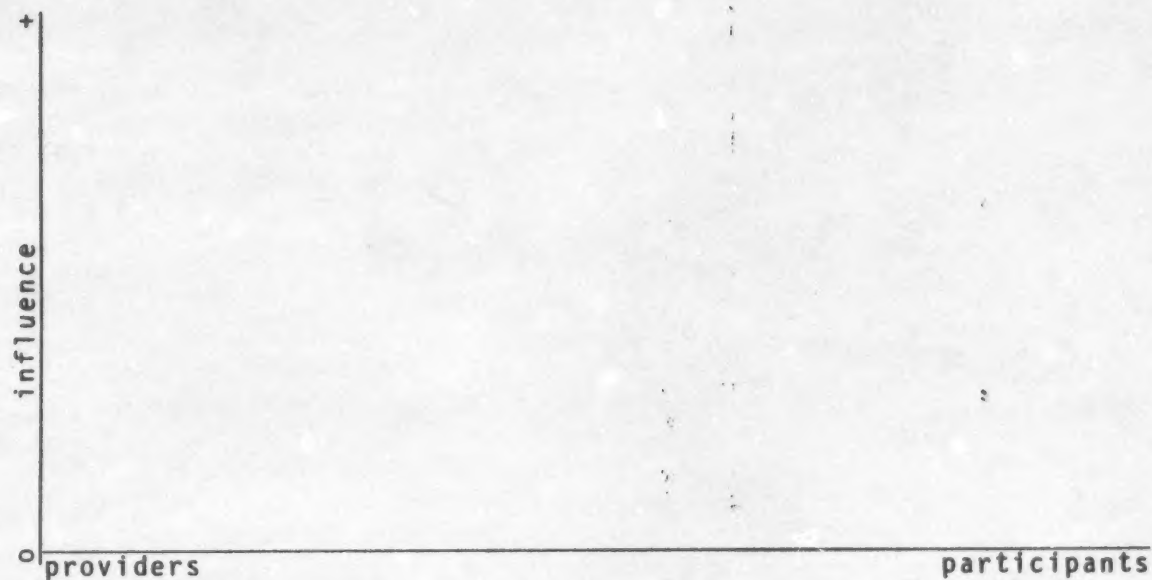


Figure 1. A Model for Configurations of Curriculum

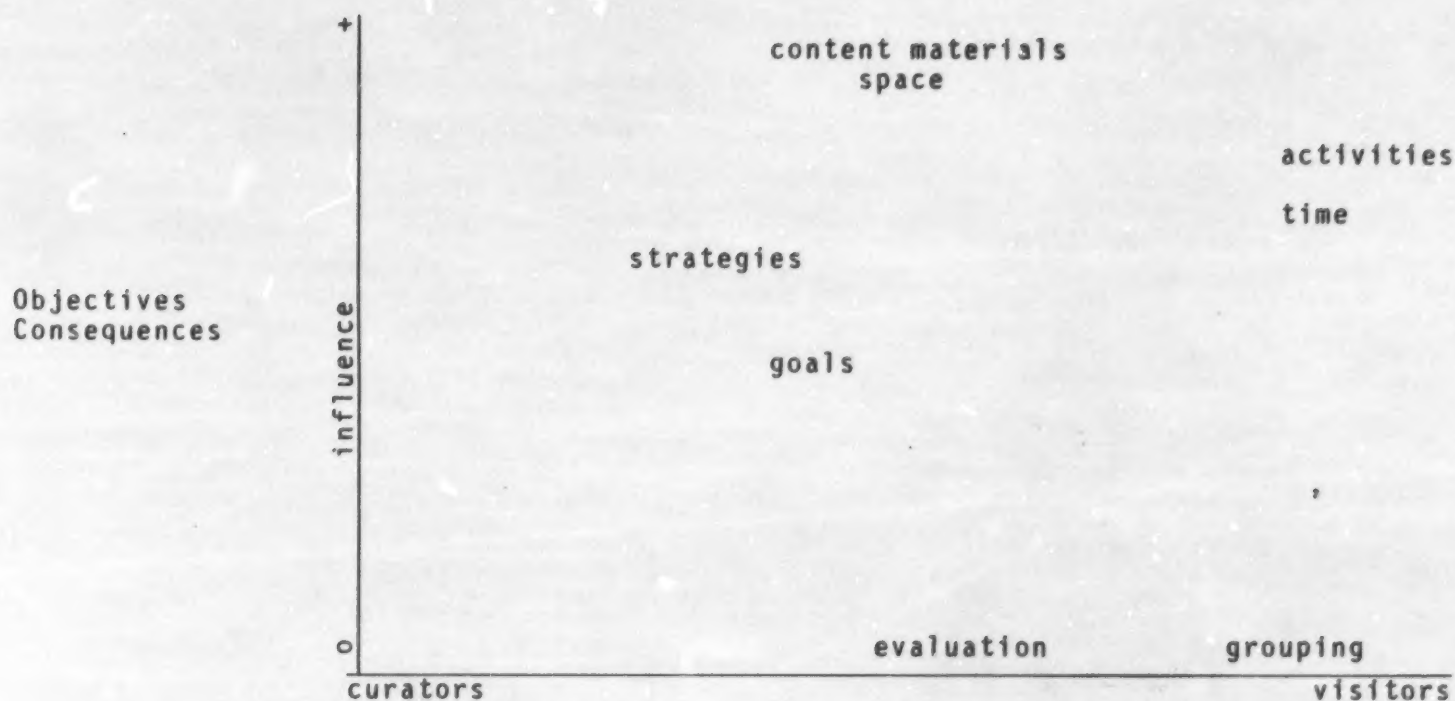


Figure 2. A Model for the Configuration of the Curriculum in Museums

element is on the participant end of the continuum, and also near materials, to show the relationship between these two elements.

Goals were related to content, and have been located near that element on the model. Goals were not found to have much influence with other elements, so they are near the bottom of that continuum.

Grouping and evaluation had little influence on the museum curriculum. The visitors were in control of grouping, and rarely altered their groups within the museum. Curators and visitors had comparable attitudes toward evaluation, so the element has been placed between them.

Objectives and consequences were not found for the museums in this study, so the elements remain outside the model. The consequences of the learning that occurs in museums were not studied in this investigation; however, it is doubtful that this element applies to museums. Neither the institution nor its visitors would be affected adversely were knowledge not gained from the experience.

The model was designed both to reflect the findings of this particular study and to be a flexible device for describing other curriculum configurations. The elements can be placed in the model in different arrangements, depending on their interactions with other elements, their relative influence on the curriculum, and their relationship with providers and participants. Elements also can remain outside the model, if they are found to not apply to a particular curriculum.

There are three advantages to using this model in the study of curriculum. First, it shifts the emphasis from the place in which curriculum occurs to the curriculum itself. The curriculum of one type of institution may vary from setting to setting, so it is of little use to classify types of education by institution. For example, "schools" involve

a variety of curricular approaches. Some schools, such as universities, primarily are institutions of discourse. On the other hand, trade schools primarily are institutions of practice. The two curricula have different goals, and use different materials, content, and activities to achieve them. To say that each has a "school curriculum" ignores the significant differences between them.

A second advantage, related to the first, in describing curriculum by its configuration is that it allows comparisons more useful than those that are made on an institutional scale. For example, schools are not museums, and a comparison of their organizational structures (i.e., one has "teachers," the other does not) says little about the type of education that occurs within both. However, a comparison of the curriculum configuration in schools and in museums may indicate ways for schools to improve their spatial arrangement or for museums to improve their evaluative techniques.

Third, describing curriculum configurations alleviates the situation in which one type of curriculum is considered to be negative of the another: school or non-school curriculum, formal or informal curriculum. Such dichotomies ignore the range of diversity in types of curriculum and institutions of learning. The model suggests that various curricula can be described according to their own characteristics, without reference to the curriculum of schools.

APPENDIX A
Participating Museums and Staff

Art Museums

Fisher Gallery
University of Southern California
Los Angeles

Selma Holo

Long Beach Museum of Art
Long Beach

Kent Smith

Frederick S. Wight Art Gallery
University of California
Los Angeles

Barbara Birney

History Museums

Los Angeles Maritime Museum
San Pedro

Shirlee Sawers

Rancho Los Cerritos
Long Beach

Ellen Calomiris

Natural Science and History Museums

Aerospace Museum
Exposition Park
Los Angeles

John Moohr

Cabrillo Beach Marine Museum
San Pedro

Cathy Crouch

Griffith Observatory
Griffith Park
Los Angeles

Suzy Gurton

Hall of Health
Exposition Park
Los Angeles

Bill Anzels
John Moohr

George C. Page Museum
La Brea Discoveries
Los Angeles

Barbara Parkhurst
Julie Raskoff
Julie Roberts

APPENDIX B OBSERVATION GUIDE

Site _____ Date _____ Time _____

Goals

1.	6.	11.	16.
2.	7.	12.	17.
3.	8.	13.	18.
4.	9.	14.	19.
5.	10.	15.	20.

Materials

written	manipulables	audio
realia (non-manip.)	models	audio-visual

Content (list exhibit content)

Strategies (Visitor-as-Teacher)

1.	6.	11.	16.
2.	7.	12.	17.
3.	8.	13.	18.
4.	9.	14.	19.
5.	10.	15.	20.

Activities

1.	6.	11.	16.
2.	7.	12.	17.
3.	8.	13.	18.
4.	9.	14.	19.
5.	10.	15.	20.

Evaluative Comments

1.	6.	11.	16.
2.	7.	12.	17.
3.	8.	13.	18.
4.	9.	14.	19.
5.	10.	15.	20.

Grouping

1.	6.	11.	16.
2.	7.	12.	17.
3.	8.	13.	18.
4.	9.	14.	19.
5.	10.	15.	20.

Time

1.	6.	11.	16.
2.	7.	12.	17.
3.	8.	13.	18.
4.	9.	14.	19.
5.	10.	15.	20.

Space

APPENDIX C
INTERVIEW GUIDE

Site _____

Date _____

1. What criteria are important to you in constructing an educational environmentt?
2. What goals (aims, purposes) do you have for the visitors?
3. What materials have you used to help visitors reach these goals?
4. What is the content of the exhibits?
5. What strategies have you used to catch the visitors' interest and help them toward the goals?
6. What activities do you expect of the visitors?
7. How do you evaluate whether or not visitors have achieved your goals?
8. What methods do you use to group visitors as they proceed through the museum?
9. How much time would you expect a visitor to spend at the displays?
10. How does the arrangement of the space of the museum help visitors achieve your goals?

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